

MINA DE COBRE PANAMA PROJECT / PORT SITE MASS EARTH WORKS



BLAST REPORT N° 9 JAN DE NUL



Location: Punta Rincón, Colón			Estimated Blast date: March 15th, 2013		
Rock Type: Basalt			Elevation: 54.00 @ 47.00		
Blast Coordinates			Blast Coordinates		
Blast Point	North	East	Blast Point	North	East
A	995572.440	533904.250	C	995539.670	533908.130
B	995568.440	533879.590	D	995543.940	533912.460
PRODUCTION BLASTING					
N° of holes:	80		Diameter:	3.50	in
Average Burden	3.00	m	Subdrilling:	0.50	m
Average Spacing	3.00	m	Average Hole Depth:	7.00	m
Stemming:	1.90	m			
Borehole inclination:	90 °				
INITIATION SYSTEM					
Pyrotechnics detonators Dual detonator (delay surface 25 ms / delay bottom 500 ms) Trunk line and delay connectors 42ms (shock tube)					
Explosive charge:		One Charge			
Explosives types:		Shot bags with Blend (Emulsion 70%/Anfo 30% mixes)			
Type and size of primer:		Boosters 3/4 pound			
Location of primer:		Down in the hole			
EXPLOSIVES NAMES					
HIGH EXPLOSIVES	Shot bags with Blend (Emulsion 70%/Anfo 30% mixes)			2,450.00	kg
	Quantity of Shot Bags			350.00	units
PRIMER	Boosters 3/4 pound			Quantity: 80	units
INITIATION SYSTEM	Pyrotechnics Detonators (15.00 m)			Quantity: 80	units
	Pyrotechnics Detonators (18.00 m)			Quantity: 0	units
	Pyrotechnics Detonators (9.00 m)			Quantity: 0	units
	Connector non-electric 42 MS			Quantity: 10	units
	Connector non-electric 17 MS			Quantity: 10	units
	Electric Detonator			Quantity: 3	units
SUMMARY					
Maximum charge per delay		43.00	kg	Total meters drilled(m):	560.90
				Total Charge (kg):	2450.00
				Rock Volume(m³) :	5048.10
				Powder factor (kg/m³)	0.49
Comentarios					

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CHARGE TABLE

Explosive Type A						Explosive Type B				
Explosive density:		1.23	g/cc			Explosive density:		g/cc		
Explosive Diameter:		3.00	in			Explosive Diameter:		in		
Linear Charge		5.70	kg/m			Linear Charge		kg/m		
Hole	Depth	Burden	Spacing	Subdrill	Stemming	Charge			Volume	Powder Factor
ID	m	m	m	m	m	m	kg	Quantity of Shot Bags	m3	kgs/m3
721	6.4	3.00	3.00	0.50	1.90	4.50	26.00	4.00	57.60	0.45
722	7.7	3.00	3.00	0.50	1.90	5.80	33.00	5.00	69.30	0.48
723	6.1	3.00	3.00	0.50	1.90	4.20	24.00	3.00	54.90	0.44
724	7.8	3.00	3.00	0.50	1.90	5.90	34.00	5.00	70.20	0.48
725	6.4	3.00	3.00	0.50	1.90	4.50	26.00	4.00	57.60	0.45
726	7.3	3.00	3.00	0.50	1.90	5.40	31.00	4.00	65.70	0.47
727	7.6	3.00	3.00	0.50	1.90	5.70	32.00	5.00	68.40	0.47
728	7.5	3.00	3.00	0.50	1.90	5.60	32.00	5.00	67.50	0.47
729	8	3.00	3.00	0.50	1.90	6.10	35.00	5.00	72.00	0.49
730	7	3.00	3.00	0.50	1.90	5.10	29.00	4.00	63.00	0.46
731	8.7	3.00	3.00	0.50	1.90	6.80	39.00	6.00	78.30	0.50
732	7.1	3.00	3.00	0.50	1.90	5.20	30.00	4.00	63.90	0.47
733	6.2	3.00	3.00	0.50	1.90	4.30	25.00	4.00	55.80	0.45
734	7.2	3.00	3.00	0.50	1.90	5.30	30.00	4.00	64.80	0.46
735	7.5	3.00	3.00	0.50	1.90	5.60	32.00	5.00	67.50	0.47
736	6.9	3.00	3.00	0.50	1.90	5.00	29.00	4.00	62.10	0.47
737	7.6	3.00	3.00	0.50	1.90	5.70	32.00	5.00	68.40	0.47
738	6.9	3.00	3.00	0.50	1.90	5.00	29.00	4.00	62.10	0.47
739	7	3.00	3.00	0.50	1.90	5.10	29.00	4.00	63.00	0.46
740	6.7	3.00	3.00	0.50	1.90	4.80	27.00	4.00	60.30	0.45
741	6.3	3.00	3.00	0.50	1.90	4.40	25.00	4.00	56.70	0.44
742	6.4	3.00	3.00	0.50	1.90	4.50	26.00	4.00	57.60	0.45
743	8.1	3.00	3.00	0.50	1.90	6.20	35.00	5.00	72.90	0.48
744	6.4	3.00	3.00	0.50	1.90	4.50	26.00	4.00	57.60	0.45
745	7.5	3.00	3.00	0.50	1.90	5.60	32.00	5.00	67.50	0.47
746	7.1	3.00	3.00	0.50	1.90	5.20	30.00	4.00	63.90	0.47
747	5.9	3.00	3.00	0.50	1.90	4.00	23.00	3.00	53.10	0.43
748	6.2	3.00	3.00	0.50	1.90	4.30	25.00	4.00	55.80	0.45
749	6.5	3.00	3.00	0.50	1.90	4.60	26.00	4.00	58.50	0.44
750	7	3.00	3.00	0.50	1.90	5.10	29.00	4.00	63.00	0.46
751	7.4	3.00	3.00	0.50	1.90	5.50	31.00	4.00	66.60	0.47
752	6.9	3.00	3.00	0.50	1.90	5.00	29.00	4.00	62.10	0.47
753	7.6	3.00	3.00	0.50	1.90	5.70	32.00	5.00	68.40	0.47
754	7.2	3.00	3.00	0.50	1.90	5.30	30.00	4.00	64.80	0.46
755	7.7	3.00	3.00	0.50	1.90	5.80	33.00	5.00	69.30	0.48
756	6.2	3.00	3.00	0.50	1.90	4.30	25.00	4.00	55.80	0.45
757	6.2	3.00	3.00	0.50	1.90	4.30	25.00	4.00	55.80	0.45
758	5.9	3.00	3.00	0.50	1.90	4.00	23.00	3.00	53.10	0.43
759	6.5	3.00	3.00	0.50	1.90	4.60	26.00	4.00	58.50	0.44
760	6.5	3.00	3.00	0.50	1.90	4.60	26.00	4.00	58.50	0.44
761	6.5	3.00	3.00	0.50	1.90	4.60	26.00	4.00	58.50	0.44
762	7.7	3.00	3.00	0.50	1.90	5.80	33.00	5.00	69.30	0.48
763	6.4	3.00	3.00	0.50	1.90	4.50	26.00	4.00	57.60	0.45
764	6.6	3.00	3.00	0.50	1.90	4.70	27.00	4.00	59.40	0.45
765	6.7	3.00	3.00	0.50	1.90	4.80	27.00	4.00	60.30	0.45
766	7.8	3.00	3.00	0.50	1.90	5.90	34.00	5.00	70.20	0.48

MINA DE COBRE PANAMA PROJECT
Port Site Mass Earth Works

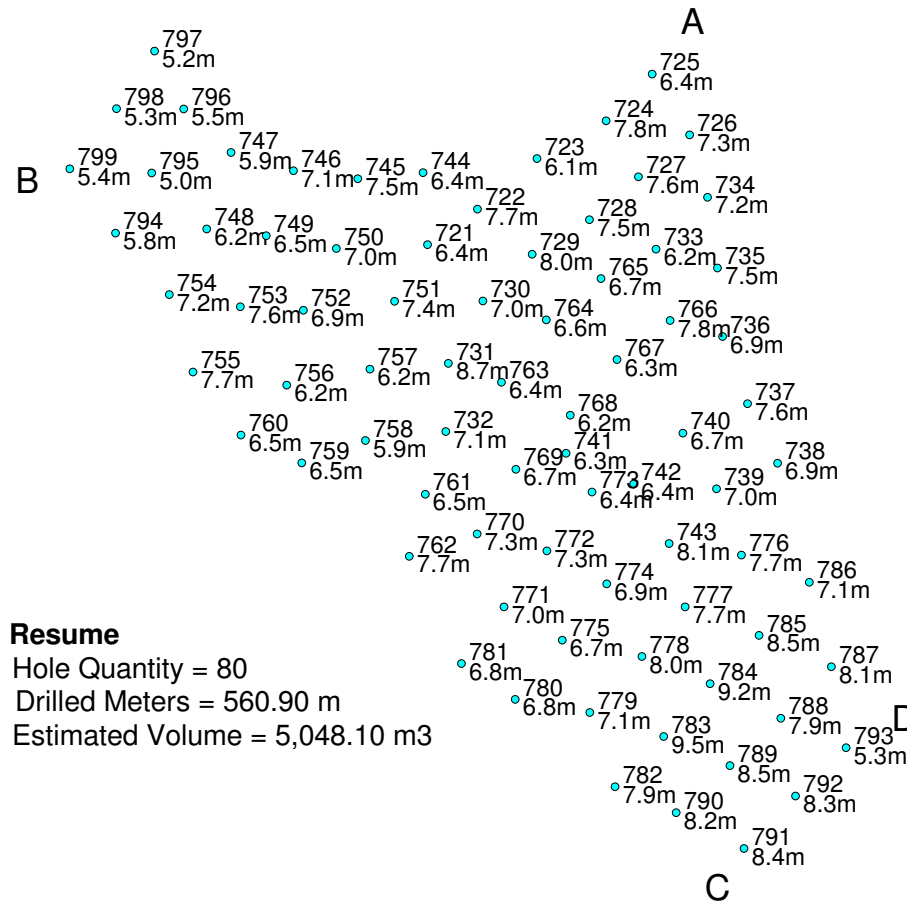
TABLE CHARGE RESUME

Number of boreholes	80	
Drilling meters	560.90	m
Meters Charged	406.90	m
Quantity of Shot Bags	350.00	
Total charge	2,450.00	kg
Blast Volume	5,048.10	m ³
Powder factor	0.49	kg/m ³
Maximum charge	43.00	kg
Average Hole Depth	7.01	m
Maximum hole depth	9.50	m
Minimum hole depth	5.00	m
Maximum subdrilling	-	m
Minimum subdrilling	-	m
Maximum stemming	2.00	m
Minimum stemming	1.80	m
Linear charge density "Explosive Type A"	5.70	kg/m
Linear charge density "Explosive Type B"	-	kg/m

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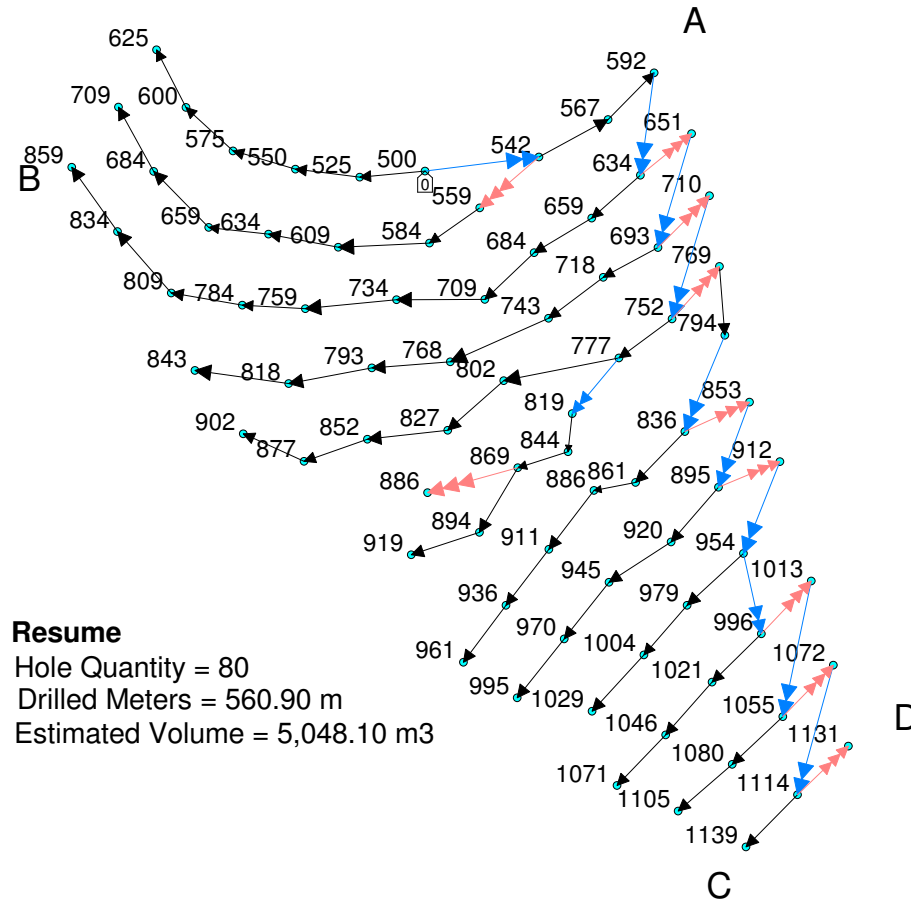
HOLE ID and HOLE DEPTH



Resume

Hole Quantity = 80
 Drilled Meters = 560.90 m
 Estimated Volume = 5,048.10 m3

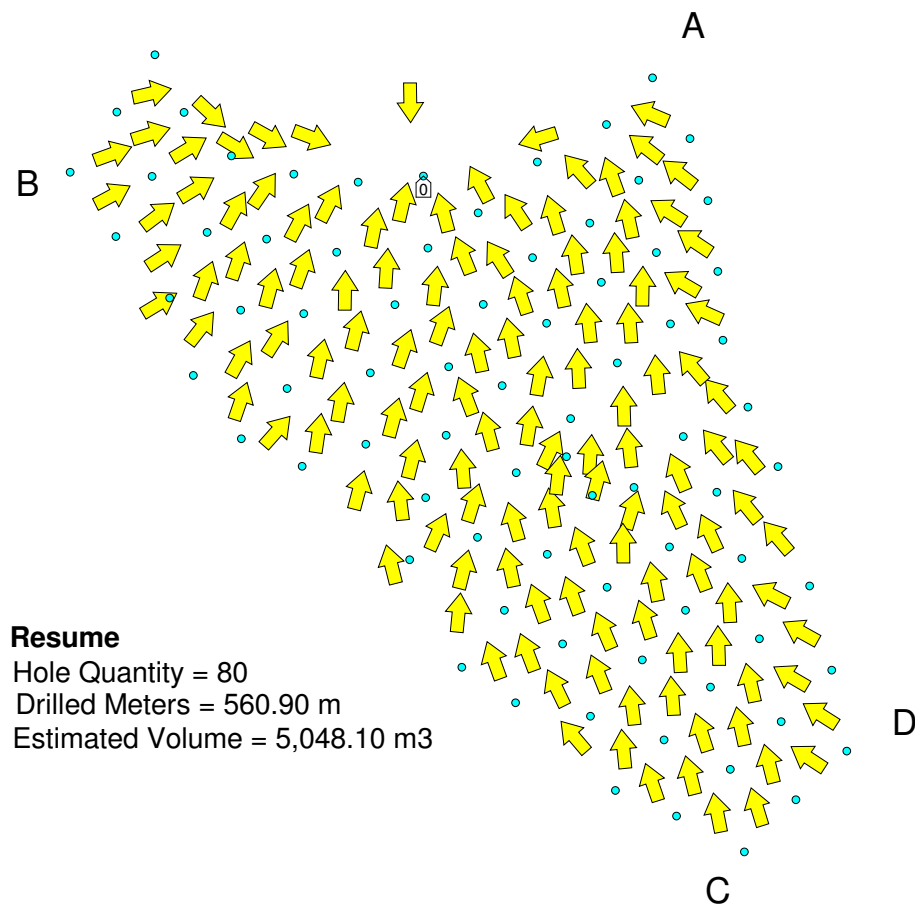
BLAST REPORT Nº 9 **PORT SITE MASS EARTH WORKS** **INHOLE NOMINAL TIMES**



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PORT SITE MASS EARTH WORKS

FIRST MOVEMENT



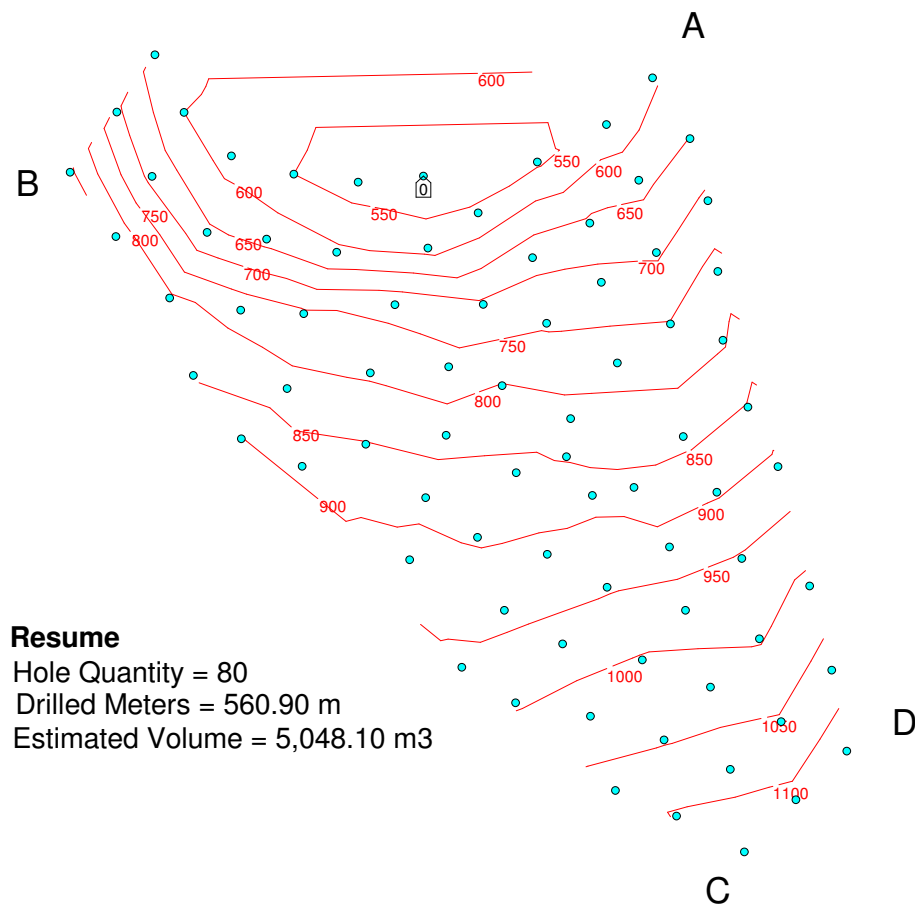
Resume

Hole Quantity = 80
Drilled Meters = 560.90 m
Estimated Volume = 5,048.10 m³

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PORT SITE MASS EARTH WORKS

ANGLE OF INITIATION



Resume

Hole Quantity = 80
Drilled Meters = 560.90 m
Estimated Volume = 5,048.10 m³

Date/Time Long at 13:53:17 March 15, 2013
Trigger Source Geo: 0.508 mm/s
Range Geo: 254 mm/s
Record Time 5.0 sec at 2048 sps
Notes
 Location:
 Client:
 User Name: ORICA PANAMA, S.A.
 General: VOLADURA

Serial Number BE14364 V 10.40-1.1 Minimate Blaster
Battery Level 6.2 Volts
Unit Calibration October 11, 2012 by InstanTel
File Name P364EPV5.8T0
Post Event Notes
 Client = Jan de Nul NV
 Blasting Plan N° 9

Extended Notes

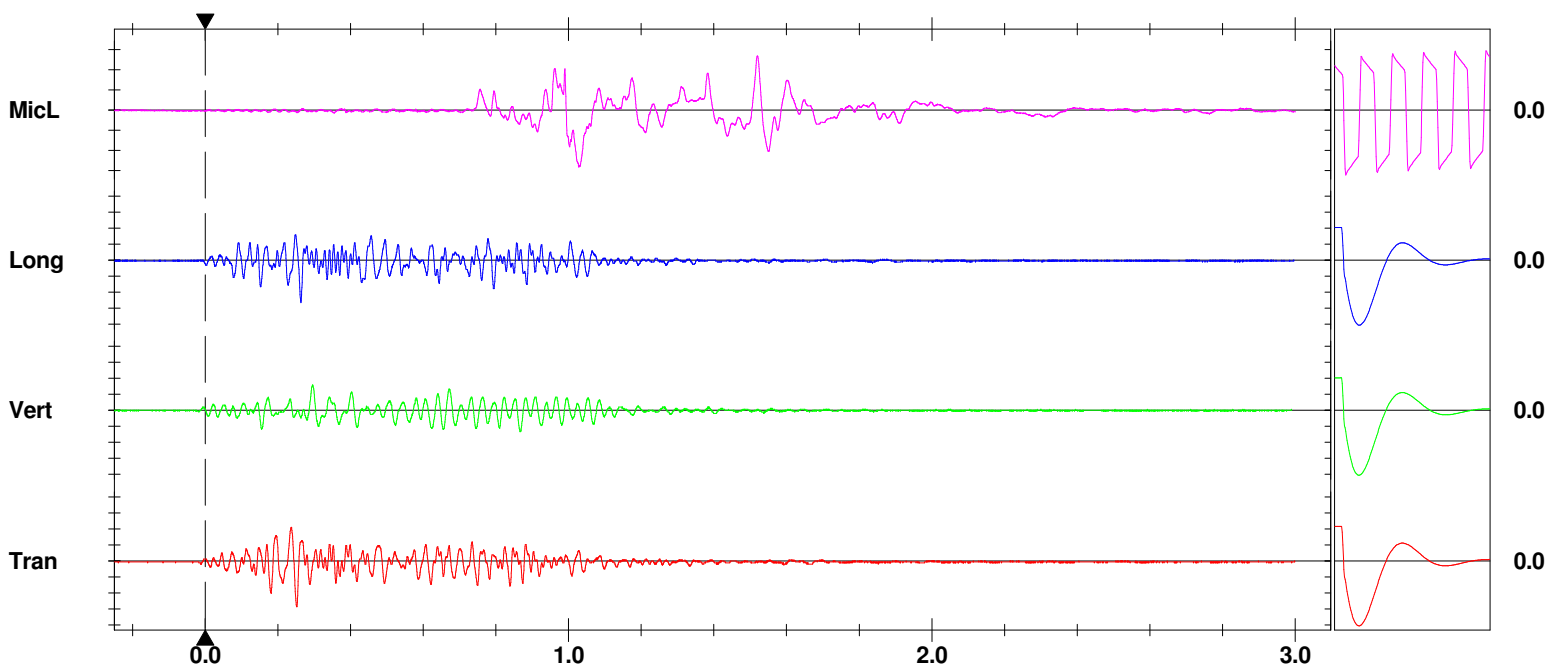
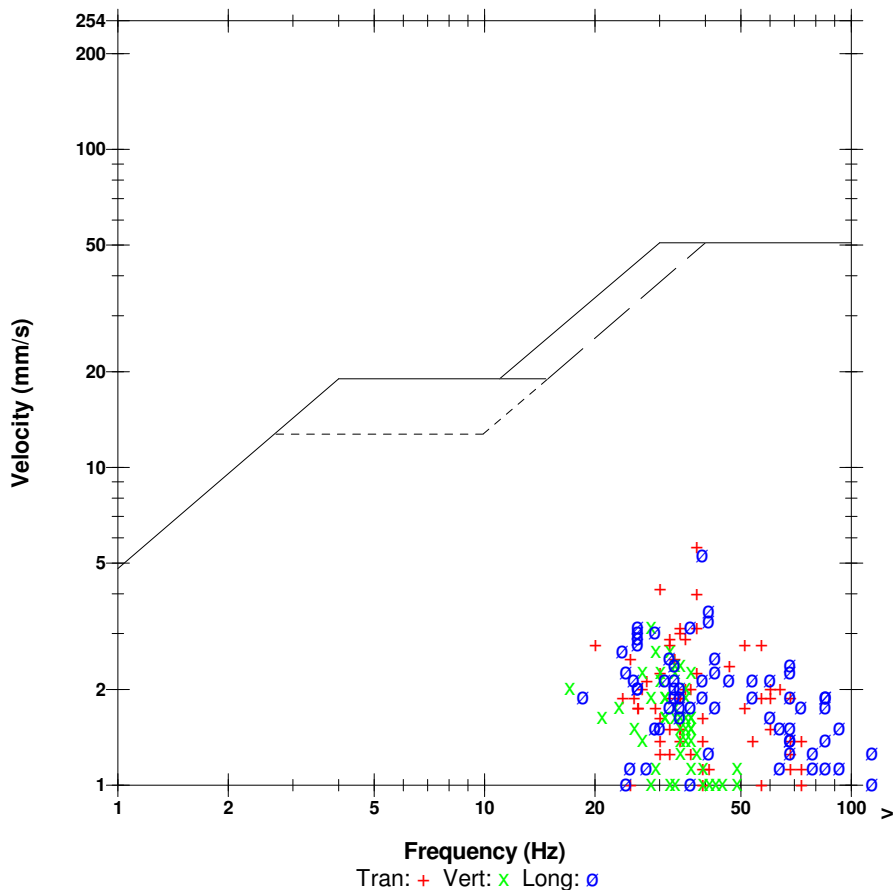
Project = Port Mass Earth Works

Microphone Linear Weighting
PSPL 123.0 dB(L) 28.3 pa.(L) at 1.028 sec
ZC Freq 6.8 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 516 mv)

	Tran	Vert	Long	
PPV	5.71	3.17	5.33	mm/s
PPV	66.1	61.0	65.5	dB
ZC Freq	38	28	39	Hz
Time (Rel. to Trig)	0.251	0.295	0.263	sec
Peak Acceleration	0.159	0.0795	0.133	g
Peak Displacement	0.0237	0.0167	0.0190	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.4	7.4	7.3	Hz
Overswing Ratio	3.7	3.7	3.8	

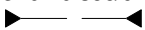
Peak Vector Sum 6.20 mm/s at 0.251 sec

USBM RI8507 And OSMRE



Time scale has been modified and may not represent the actual length of the event record

Time Scale: 0.20 sec/div Amplitude Scale: Geo: 2.00 mm/s/div Mic: 10.00 pa.(L)/div

Trigger = 

Sensor Check

Date/Time Long at 13:53:17 March 15, 2013
Trigger Source Geo: 0.508 mm/s
Range Geo: 254 mm/s
Record Time 5.0 sec at 2048 sps

Serial Number BE14364 V 10.40-1.1 Minimate Blaster
Battery Level 6.2 Volts
Unit Calibration October 11, 2012 by Instantel
File Name P364EPV5.8T0

Notes

Location:
 Client:
 User Name: ORICA PANAMA, S.A.
 General: VOLADURA

Extended Notes

Project = Port Mass Earth Works

Post Event Notes

Client = Jan de Nul NV
 Blasting Plan N° 9

